Multi-County Goods Movement Action Plan

Orange County Action Plan

Prepared for:

Los Angeles County Metropolitan Transportation Authority
California Department of Transportation
Orange County Transportation Authority
Riverside County Transportation Commission
San Bernardino Associated Governments
Southern California Association of Governments
Ventura County Transportation Commission
San Diego Association of Governments

Prepared by:
Wilbur Smith Associates

In association with:
The RNO Group
Gill V. Hicks & Associates, Inc.
George R. Fetty & Associates
Economics & Politics, Inc.
Arellano Associates
Jones & Stokes
Urban Solutions, LLC
Sharon Greene & Associates

ENGINEERS
PLANNERS
ECONOMISTS
Wilbur Smith Associates

April 30, 2008

Table of Contents

List of Tables

List of Figures

Introduction

Purpose

This report outlines a Goods Movement Action Plan for Orange County, California, part of a broader Multi-County Goods Movement Action Plan (MCGMAP) developed collectively by the Los Angeles County Metropolitan Transportation Authority (Metro), Orange County Transportation Authority (OCTA), Riverside County Transportation Commission (RCTC), San Bernardino Associated Governments (SANBAG), San Diego Association of Governments (SANDAG), Ventura County Transportation Commission (VCTC), Southern California Association of Governments (SCAG), and the California Department of Transportation (Caltrans). The MCGMAP contains strategies to support the efficient movement of goods without disproportionately impacting local communities, the environment, or the transportation network. The MCGMAP is also a regional framework for goods movement initiatives.

This report examines the key issues that impact Orange County from a goods movement standpoint. It examines the plans and proposals that are being pursued to resolve stated issues, and specific actions and strategies, which should become a focus for the county. This report builds on a large body of work that has been researched and developed over the past few years, all of which collectively addresses a comprehensive range of goods movement issues.

The Orange County Goods Movement Plan is intended to be an element within the broader Multi-County Goods Movement Action Plan. One of the objectives of the Action Plan is to determine specific transportation actions and performance on the regional transportation system and users of the system, make specific recommendations regarding freight transportation strategies, and develop a consensus based transportation improvement program by the project partners. The county report focuses on existing and future freight movements that originate within and outside the county, however, the context relates to the broader interaction of one segment of the regional transportation system as reflected in the Action Plan.

The Multi-County Goods Movement Action Plan has recommended four primary action sets for goods movement within the region. The action sets are:

- Action Set 1: Accelerate Regional Environmental Mitigation
- Action Set 2: Relieve Congestion and Increase Mobility
- Action Set 3: Improve Operational Efficiency
- Action Set 4: Develop Equitable Public/ Private Funding Strategy

The County's Goods Movement Profile

- As the county and the region continues to attract new business and residents, it will be essential to ensure that the strengths of the county's transportation system are maintained by addressing congestion and increased movement of freight into and outside the geographic area of the county. The transportation system provides mobility of freight from the ports of Long Beach and Los Angeles to destinations throughout California and beyond. However, this county is also a producer and distributor of goods that enter the supply chain to diverse locations beyond our borders to more distant markets.

- The goals and strategies that are reflected to enhance freight movement in the county are:

    1. Support the county's economic well-being while remaining sensitive to environmental needs and concerns.
    2. Expand the development and funding of grade separations.
    3. Improve the capacity and quality of second tier roadways (Master Plan of Arterial Highways) which are used heavily for freight movement.
    4. Implement strategic improvements to facilitate mobility and support the efficient and reliable freight movement throughout the transportation systems in the county.
    5. Ensure adequate mainline freight capacity and safety.
    6. Continue to identify system needs and to research and develop technology for facilitating goods movement collaboratively with state, regional and local transportation agencies.
    7. Ensure mitigation of potential impacts for projects that will be implemented.

- The major regional corridors addressed in the Action Plan provide links between large geographic areas that support the movement of freight within and outside the region. Even though the Action Plan breaks out a plan for each county this is in the context of the diversity of manufacturing, distribution, inter-modal facilities, diverse land-use patterns, freight characteristics and movement on the transportation system. This demonstrates the importance of partnership planning and integration of strategies to meet both existing and future demands on the regional transportation system. There needs to be a regional perspective to guide future development, continuously monitor progress and point out adjustments needed as a result of changing conditions. This reflects movement of freight by air, railroad, marine and road.

- Rapid growth of freight and automotive traffic is a major challenge to the continued viability of the regional transportation system. As most corridors cross into other jurisdictions and involves regional and local roadways, the plan provides for the continuation of partnerships among governments and stakeholders to ensure successful planning and implementation of projects. This will ensure a seamless freight system that serves the region in which each mode performs the service function for which best meets the needs of goods movement.

Institutional Relationships

OCTA has expanded its role as regional partner in building coalitions to help meet the region's good movement challenges. For example, last year OCTA become a partner in Mobility 21, a Southern California region wide organization of public and private sector goods movement stakeholders. A mission of Mobility 21 is to advocate for Southern California's fair share of state and federal transportation funds.

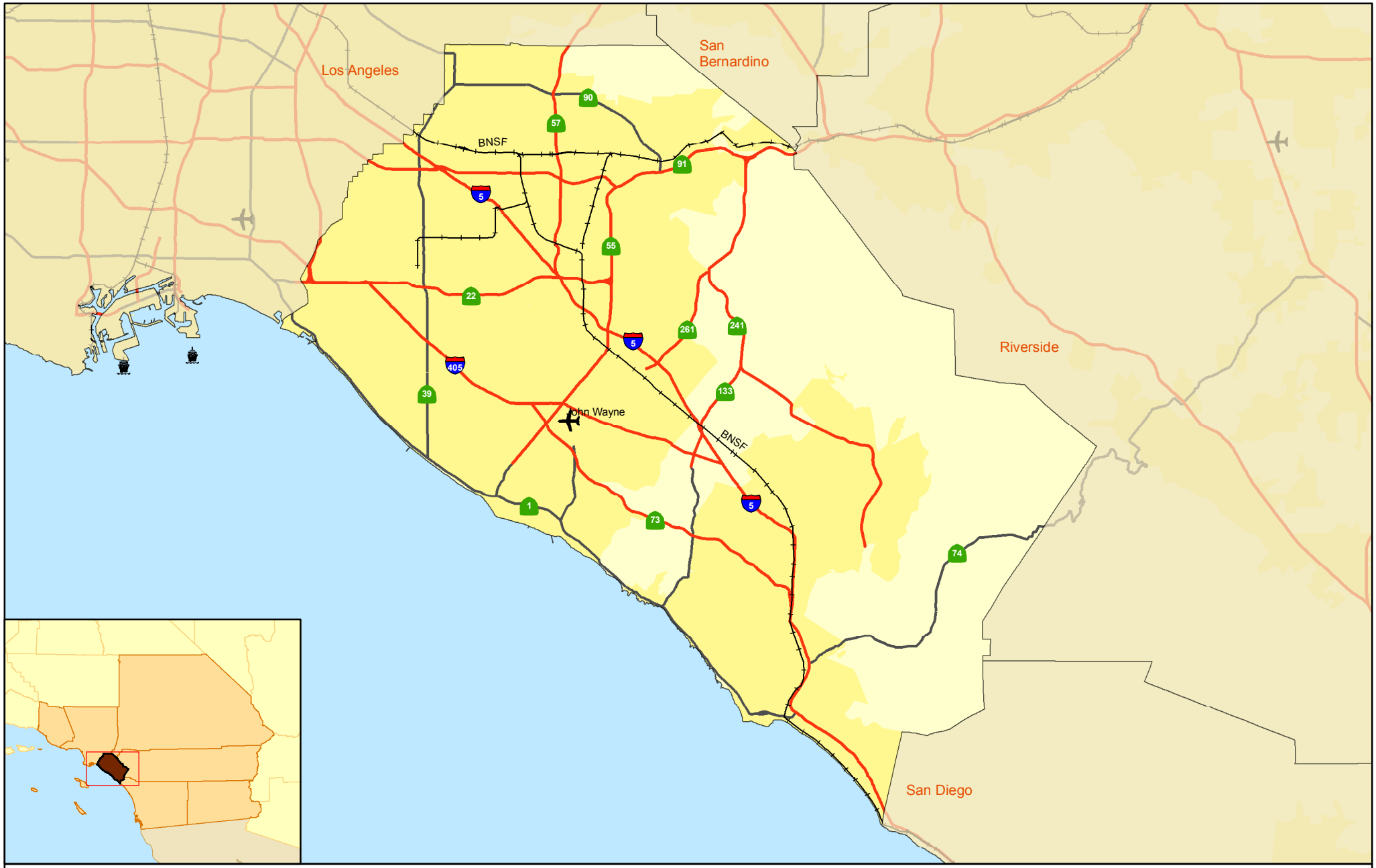
In January 2007, the Board held a Goods Movement Workshop, where experts in goods movement outlined for Board Members, the important goods movement challenges facing the county and the region.

In March 2007, the Board adopted a goods movement policy, one of whose major tenants was the recognition of the enhancements to the region's good movement systems i.e. expanded road and rail capacity while at the same time mitigating the impacts of the enhancement to local communities.

In October 2007, OCTA along with over twenty federal, state, local, and regional agencies signed the Southern California National Freight Gateway Cooperative Agreement. The purpose of the agreement was to "bring to the table" federal and state agencies such as the United States Environmental Protection Agency, the United States Department of Transportation, and the California Business Transportation and Housing Agency, to discuss such topics as air quality and international trade policy.

More recently, OCTA played a major role in the formation of the Southern California Trade Corridors Improvement Fund Consensus Working Group. Working together with other regional transportation agencies and the ports of Los Angeles, Long Beach, and Hueneme, the Los Angeles/ Inland Empire Trade corridor is currently in a position to receive and estimated $1.6 billion in goods movement projects, from Proposition 1B bond funding passed by the voters in November 2006.

Figure 1 shows Orange County and the primary infrastructure features in the county.



Multi-County Goods Movement Action Plan
Orange County

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES

Sources:
StreetMap 2006

Figure 1

While Orange County has a significant level of goods movement activity, it is primarily a bridge for truck and rail traffic between Los Angeles and the Inland Empire. The goods movement story is well documented and appreciated in the county, starting with the comprehensive 1998 *Orange County Goods Movement Study*, followed by several subsequent goods movement efforts, including but not limited to the following:

- Alameda Corridor East Trade Corridor Plan, 2001 (Updated in 2006)
- Demonstration Projects and City Projects for Reauthorization of Transportation Equity Act 21, January 2003
- Analysis of Truck Volumes Along Key Corridors, May 2005
- Project Study Report for SR-57 Northbound Climbing Lane Widening, July 2005
- The OCTA Goods Movement Roundtable Effort, July 2005
- SR-91 Chokepoint Projects, 2006
- Orange County Gateway Project, 2006
- Goods Movement Action Plan, Business Transportation and Housing Agency and California Environmental Protection Agency, January 2007

Role

Ports/Air

Although Orange County is located on the coast, it does not have a maritime port. From a geographic perspective, the county does not have a physical feature conducive to a large port. In the 1830s, California rancheros shipped hides from Bahia Capistrano, now Dana Point, but this location never materialized into a major port[1]. However, the county transportation system provides accessibility from the ports of Los Angeles, Long Beach, and San Diego for movement of freight throughout the region.

Air cargo is dominated in the region by Los Angeles World Airport (LAX). The air cargo handler in Orange County is John Wayne Airport. Table 1 provides air cargo figures for the SCAG region counties. As mentioned in the table, LAX and Ontario provide the majority of air cargo in the region. Air Cargo tonnage handled at the John Wayne Airport dropped by 8% for the year 2007 (22,062 tons) compared to 2006 (24,033 tons)[2].

[1] History of Dana Point, http://homepage.mac.com/bridgeguys/UGlossary/DPhistory.html

[2] John Wayne Airport, http://www.ocair.com/newsandfacts/factsataglance.htm

Figure 2
John Wayne Airport

Source: John Wayne Airport and The Captured Image dba We Shoot.

Table 1
Air Cargo Activity 2003-2005 MCGMAP Study Area Airports (In Tons)

Airport	2003	2004	2005	2005 Market Share
Los Angeles (LAX)	2,022,076	2,115,314	2,137,188	75.20%
Ontario (ONT)	571,992	605,211	575,369	20.20%
Long Beach (LGB)	56,081	57,050	54,298	1.90%
Bob Hope (BUR)	47,634	49,633	52,867	1.90%
John Wayne (SNA)	15,816	20,796	24,103	0.80%
Total	2,713,599	2,848,004	2,843,825	100.00%

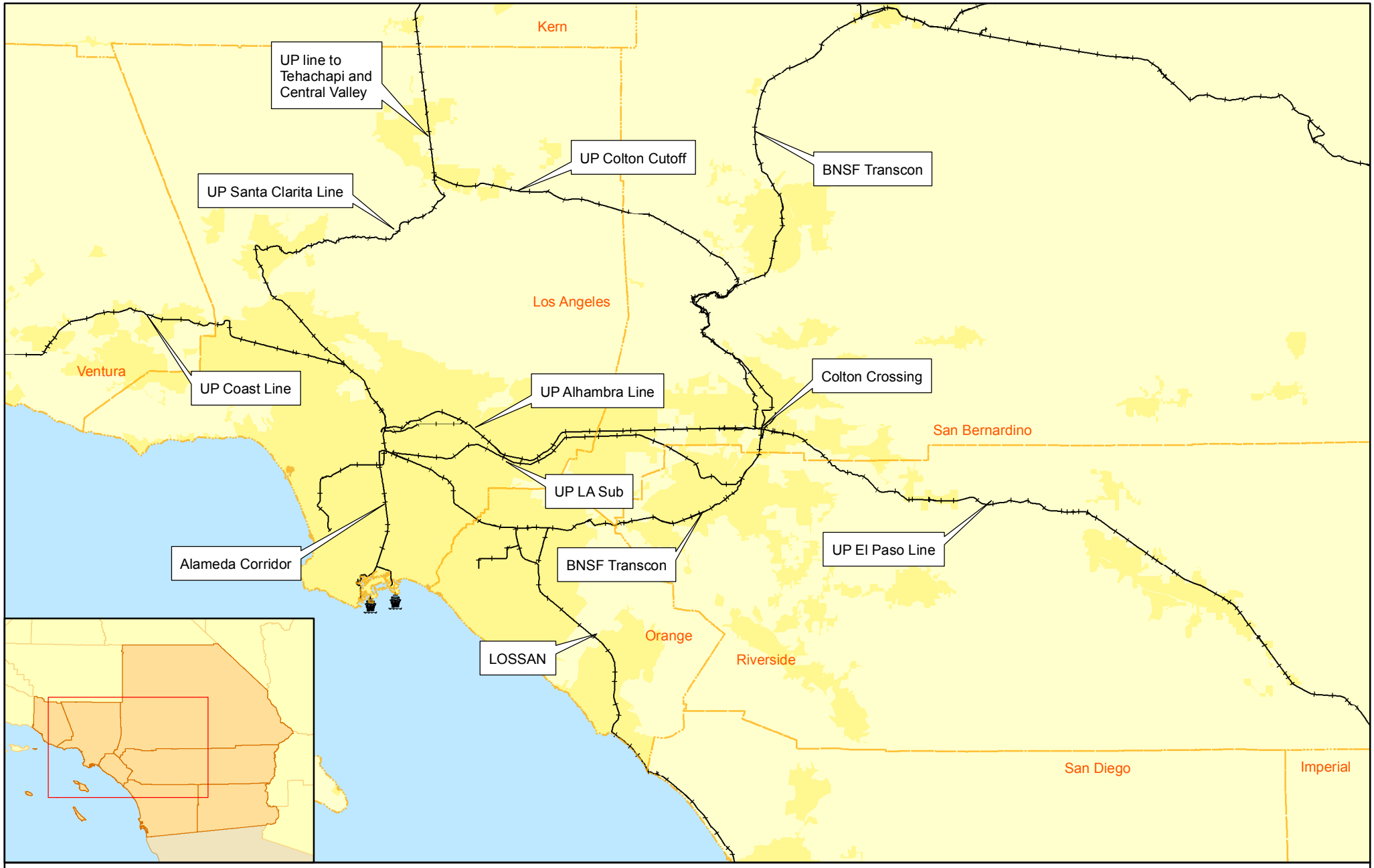
Source: SCAG Region Aviation Activity Report, 2003-2005

Rail

There are three railroad lines providing passenger and freight service in Orange County. The Orange County Transportation Authority (OCTA), by virtue of an operating agreement in 1992 with the Burlington, Northern and Santa Fe's (BNSF) predecessor, the Atchison, Topeka and Santa Fe, is the owner of the Orange and Olive subdivisions. The Orange subdivision stretches from the San Diego line to the junction with the BNSF in the City of Fullerton. Rail traffic on the Orange subdivision consists of the Metrolink Orange County Line and Inland Empire-Orange County (IEOC) Line service, Amtrak Pacific Surfline trains, and a minimal number of freight trains. The Olive subdivision stretches from just north of the City of Orange Metrolink station to the junction with the BNSF in the City of Placentia. Rail traffic on the Olive subdivision consists of IEOC trains and a minimal number of freight trains.

The BNSF is the owner of the San Bernardino subdivision in Orange County. The subdivision stretches from the Orange County/Riverside County Line near the City of Yorba Linda to the Orange County/Los Angeles in the City of Buena Park. The BNSF San Bernardino subdivision runs through the cities of Yorba Linda, Anaheim, Fullerton, Placentia, and Buena Park and is frequently referred to as the Orangethrope Corridor or Alameda Corridor East (ACE). Rail traffic on the subdivision consists largely of BNSF freight trains and a minimal number of Metrolink 91 line, IEOC line, and Amtrak trains.

The rail mainlines that operate through the MCGMAP region is shown in Figure 3.



Multi-County Goods Movement Action Plan
Railroad Lines

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES

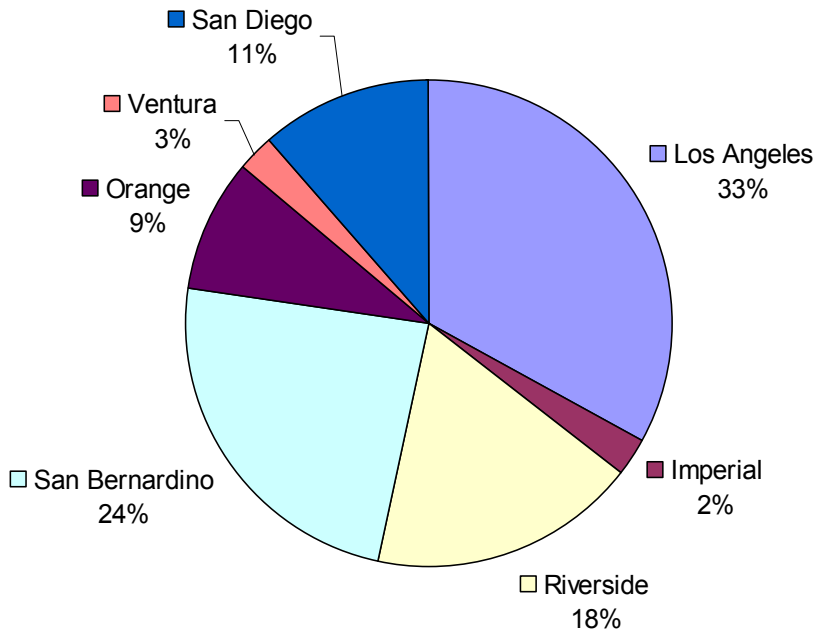
Sources:
StreetMap 2006
MCGMAP Tech Memo 3 2006

Figure 3

Trucks

Figure 4 shows the distribution of truck traffic in the region by county, measured in terms of truck miles of travel on the state highway system. Orange County accounts for approximately 9 percent of the total regional truck miles of travel, which means it ranks fifth (5th) out of the seven study area counties.

Figure 4
2003 Percentage of Truck VMT in the MCGMAP Study Area by County



Source: Truck Miles of Travel: California State Highway System 1988-2003, Caltrans 2005.

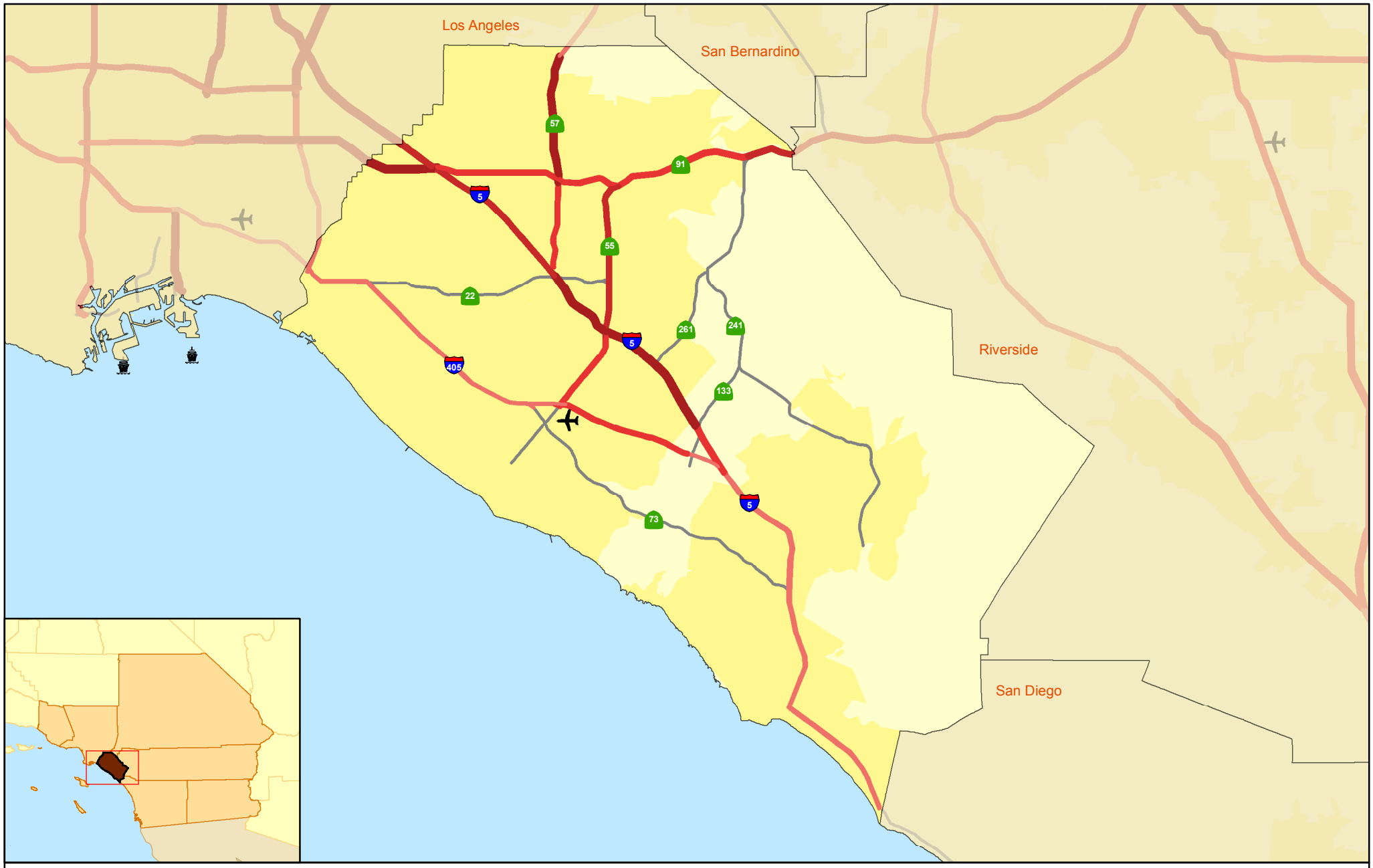
Orange County has significant truck volumes on a number of highway segments as shown in Table 2. Segments of I-5, I-405, SR-91, and SR-57 have Average Daily Trips (ADT) in excess of 20,000.

Table 2
Year 2003 Truck ADT

Route	Segments	County	Year 2003 Trucks[1]		Total ADT 2003
			N/E	S/W	
I-405	I-5 to SR-133	Orange	4,581	5,027	9,608
I-405	SR-133 to SR-55	Orange	6,827	6,802	13,629
I-405	SR-55 to SR-22	Orange	4,174	4,106	8,280
I-405	SR-22 to I-605	Orange	5,423	4,163	9,586
I-5	SR-55 to SR-57	Orange	10,764	11,252	22,016
I-5	SR-133 to SR-55	Orange	11,957	10,059	22,016
I-5	I-405 to SR-133	Orange	8,135	6,757	14,892
I-5	SR-73 to I-405	Orange	5,151	4,334	9,485
I-5	SD County Line to SR-73	Orange	5,188	4,269	9,457
SR-55	I-405 to I-5	Orange	7,186	6,734	13,920
SR-55	I-5 to SR-22	Orange	7,631	7,532	15,163
SR-55	SR-22 to SR-91	Orange	7,872	7,291	15,163
SR-57	I-5 / SR-22 to SR-91	Orange	7,272	7,688	20,400
SR-57	SR-91 to SR-60	Orange	10,404	9,996	20,400
SR-91	I-605 to I-5	LA/OR	12,092	13,188	25,280
SR-91	I-5 to SR-57	Orange	6,802	6,805	13,607
SR-91	SR-57 to SR-241	Orange	6,249	6,842	13,091
SR-91	SR-241 to I-15	RIV/OR	7,616	9,115	16,731

Source: Caltrans, Traffic and Vehicle Data Systems Unit, 2004 Truck, Wilbur Smith Associates, 2006
Note: 1. Trucks include all Heavy-Duty Trucks (Light HDT, Medium HDT, and Heavy HDT).

A map of ADT is provided in Figure 5. I-5 is a major north-south truck corridor and the SR-91 is a principal route from the ports of Long Beach and Los Angeles to warehouses in Orange County, warehouses in the Inland Empire, and points outside the study area to the east. These routes are critical infrastructure for goods movement and demonstrate Orange County's role as a bridge between other counties.



Multi-County Goods Movement Action Plan
2003 Truck ADT

Sources:
StreetMap 2006
Caltrans 2004
WSA 2006

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES

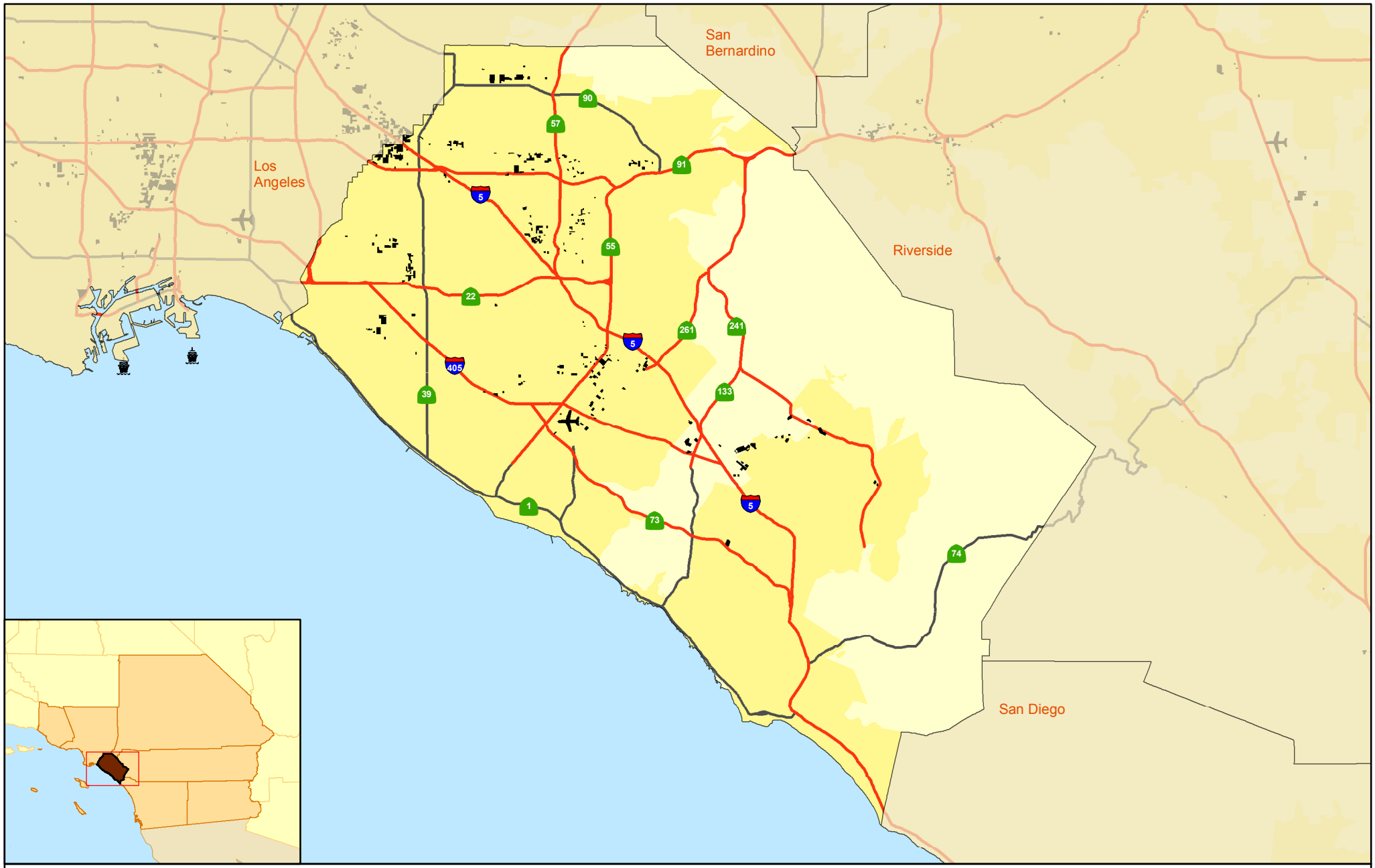
Figure 5

Warehousing

Orange County's proximity to the burgeoning warehousing and logistics centers in Los Angeles and through the Inland Empire, combined with a well-developed freeway system, has made it an attractive locale for warehousing activities. Orange County is the 10th largest industrial and office market in the country with an inventory of over 271 million SF[3]. The greatest concentration of warehousing and industrial activities is along the SR-91, SR-57, and I-5 corridors, as well as along the western boundary with Los Angeles County, as shown in Figure 6.

Continued growth in shipments of freight to the region and to other points in the U.S. have seen a burgeoning of warehousing and logistics centers in Los Angeles, Orange and the Inland Empire due to multiple distribution locations and a well developed and integrated freeway and local arterial system in the region. Some goods are carried cross-country using inter-modal transportation to save time and money. Inter-modal transportation encompasses any combination of transportation by truck, train, plane, or ship. Typically, trucks perform at least one leg of the trip. Trucking dominates the transportation of perishable and time-sensitive goods. In 2006 the Bureau of Labor Statistics indicated that nationwide there were over 28,000 local trucking establishments, 41,000 long distance trucking firms, specialized freight trucking such as refrigerated cars and flatbeds 48,000 companies and 14,000 warehousing and storage facilities. With the estimated 42,500 TEUs expected at our regions ports over the next 20 years, these regional warehousing activities are one link in an increasingly local, regional, and national global supply chain and distribution system.

[3] Society of Industrial and Office Realtors, 2005 Market Review and Outlook



Airports
Ports
Freeways
Highway
Urban Areas
Wholesaling/Warehousing

Multi-County Goods Movement Action Plan
Warehouse Land Use

0 5 10 20 Miles

N

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES

Sources:
StreetMap 2006
SCAG 2000 Land Use

Figure 6

County Specific Issues

The major goods movement related issues in Orange County are:

- Mainline Rail Capacity Issues
- At-Grade Rail Safety and Congestion
- Growing Truck and Vehicle Volumes on Orange County's Main Freeway Corridors
- Warehousing and Other Local Truck Related Traffic
- NAFTA Truck Traffic
- Corridor Convergence Issues
- Air Quality

The following section discusses these six goods movement concerns.

Mainline Rail Capacity Issues

Total passenger and freight train movements broken down by rail segments for the Year 2000 are presented in Table 3.

Table 3
Total Passenger and Freight Train Movements

Line Segment	Freight Total Through Train Movements per Peak Day (Year 2000)	Passenger Total Through Train Movements per Peak Day (Year 2000)
BNSF Hobart – Fullerton Jct.	50	46
BNSF Atwood – West Riverside	57	16
Metrolink Orange County Line	--	14
Metrolink Inland Empire – Orange County Line	--	10

Source: Inland Empire Railroad Main Line Study, Final Report, June 30, 2005.
Note: Any blank indicates the non-existence of train movements on that particular rail line.

The Table 4 shows BNSF freight traffic and passenger train volumes, for rail segments passing through Orange County. At Atwood, a Metrolink-owned line to Orange County diverges from the BNSF line. This line is used by BNSF through freight trains to/from San Diego. At Fullerton, another Metrolink-owned line to Orange County junctions with the BNSF line. This line does not see through freight train operations, but it does see heavy use by Amtrak and Metrolink passenger trains. The freight and passenger summary rail forecasts shown in Table 4 were derived from the Wilbur Smith Associates team forecast discussed in Tech Memo 4a. Freight volumes include inter-modal and carload traffic on the BNSF and UP mainlines. Passenger rail forecasts include Amtrak long distance trains, Amtrak Pacific Surfliner corridor trains

(Corridor), and Metrolink commuter trains. The forecasts were based on the most recent available data from BNSF, UP, Amtrak, and Metrolink.

Table 4
Peak-Day Rail Traffic for 2025
(Number of Trains per Day by Segment)

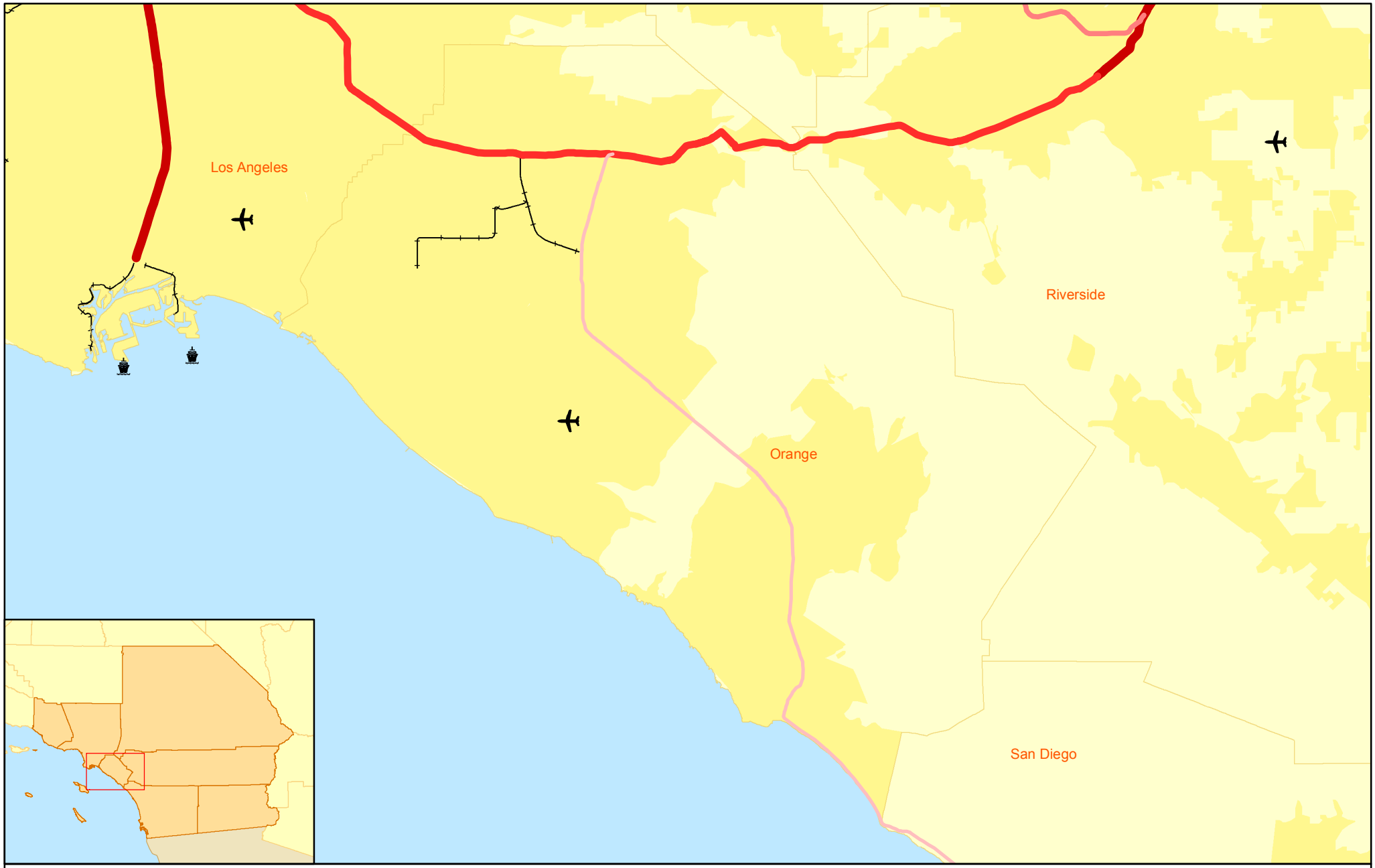
	Atwood-Fullerton	Atwood-Orange	Fullerton-Orange	Orange-Irvine/San Juan Capistrano/Oceanside/San Diego
BNSF through freight	102	9	--	9
Passenger – Metrolink	26	40	48	88
Passenger – Corridor	--	--	32	32
Passenger - Amtrak	2	--	--	--
UP through freight	--	--	--	--
Year 2025 Total	130	49	80	129

Source: Wilbur Smith Associates, 2006
Note: Any blank indicates the non-existence of train movements on that particular rail line.

Figure 7 shows the increase in rail freight volumes by the year 2025 and, Figure 8 shows the increase in total rail volumes for the year 2025.

To accommodate projected freight rail traffic along the BNSF Transcon line, a 14.8 mile triple track project is under construction from the Hobart Yard in Los Angeles County to Fullerton (5 miles have been completed). The Metrolink commuter rail service shares the same tracks with BNSF. The commuter service is essential to linking residents with their jobs and other activities throughout the region. Metrolink plans to expand its service over the next decade. With the triple track project completion, there will be less negative impact on Metrolink and other passenger rail services throughout the County.

The key issue regarding this corridor is that the projected growth in both commuter and freight train traffic will lead to significant grade crossing delays and conflicts between commuter and freight trains. Absent enhancements in line capacity, these conflicts will result in train delays and safety concerns. The 2004 OCTA Commuter Rail Strategic Assessment, produced by Wilbur Smith Associates, supports the conclusion that the capacity of the BNSF's existing double track line through Orange County will prove insufficient to handle the projected increases in both commuter and freight traffic.

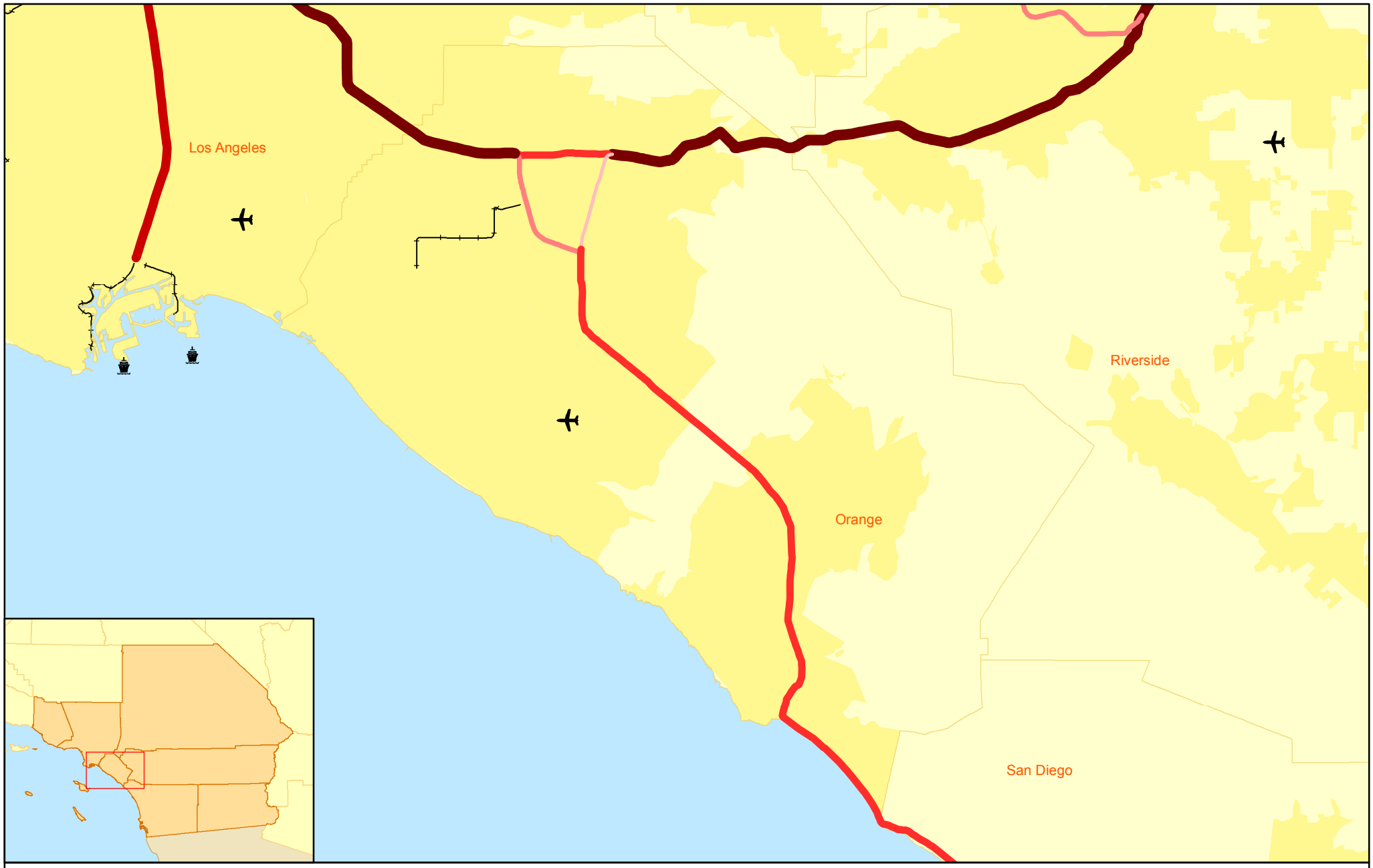


Multi-County Goods Movement Action Plan
2025 Forecast Rail Freight Volume

Sources:
StreetMap 2006
WSA 2006

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES

Figure 7



Multi-County Goods Movement Action Plan
2025 Forecast Rail Volume

Sources:
StreetMap 2006
WSA 2006

ENGINEERS PLANNERS ECONOMISTS
WilburSmith ASSOCIATES

Figure 8

Proposed rail mainline enhancements in Orange County is included in the MCGMAP project list presented in this document. Orange County is included in the mainline improvements to BNSF rail. Preliminary infrastructure costs for triple tracking the BNSF Los Angeles/Fullerton segment and the BNSF Fullerton/San Bernardino segment were estimated at approximately $287 million.[4]

At-Grade Rail Safety and Congestion

Grade crossings are locations at which automotive traffic crosses railroad right-of-way (ROW) at-grade. Currently, more than 70 trains per day travel through the Orangethorpe rail corridor. This corridor, also called the Orange County Gateway, is centered at the intersection of the San Bernardino Subdivision and the Orange/Olive Subdivision in the Placentia/Anaheim area. By the year 2020, the number of trains running through this corridor is projected to increase to 150 trains per day. Currently, this train traffic halts vehicular and pedestrian traffic at the intersections it crosses. Since the trains have the right of way, an increase in traffic delay is unavoidable leading to driver and pedestrian safety concerns. In addition, delays for commuters and emergency-response traffic, as well as noise, vibration, and air pollution are all concerns for the people who live and work near the rail corridors. However, with the implementation of grade separation projects and quiet zones, these concerns can be mitigated.

Orange County is included in the MCGMAP project list with the grade separation improvements in the Alameda Corridor - East (ACE) Trade Corridor. According to the Alameda Corridor–East Trade Corridor Plan project funding summary, Orange County has approximately over $400 million in unfunded grade crossings[5].

Growing Truck and Vehicle Volumes on Orange County's Main Freeway Corridors

The freight industry in Orange County is well served by a highly developed freeway system. Segments of I-5, SR-91 and SR-57 have volumes in excess of 20,000 ADT. SR-55 has segments with volumes just over 15,000 ADT. I-405 between SR-22 and I-605 will experience truck volumes of more than 35,000 ADT by 2030. The area around Anaheim and Orange, where routes converge, show the highest concentration of truck activity largely due to a critical mass of warehouse, industrial, retail and entertainment land uses.

Currently, on SR-57, average daily truck volumes are as high as 20,000; representing 12 percent of total traffic during peak hours and 18 percent during midday. Northbound SR-57 experiences a significant level of delay due to the large percentage of existing truck traffic and a long climbing grade. The current average northbound freeway speed during evening peak periods is 10 miles per hour, which is defined as a failing level of service for freeways. The conditions will likely continue to deteriorate.

[4] BNSF Southern California Infrastructure Proposal 2006

[5] Alameda Corridor - East Completion – Funding Sources

Table 5 provides forecasts of truck volume growth based on the difference between base year (year 2003) and 2030 truck volumes derived from model runs conducted by SCAG. Travel demand model volumes typically don't exactly match existing counts, therefore Table 6 presents the post-processed truck volumes for the Year 2030. The post-processed volumes are the adjusted year 2030 volumes based on the calculated difference in forecast volumes for the base year (Year 2003) compared to available existing traffic counts.

Table 5
Year 2003 and Year 2030 Truck Volumes Derived from Model Runs

Route	Segments	SCAG Model 2003 Truck Volume	SCAG Model 2030 Truck Volume	Percent Change in Daily Truck Volume
SR-55	I-405 to I-5	10,854	13,859	28%
SR-57	SR-91 to SR-60	16,434	22,003	34%
SR-57	I-5 / SR-22 to SR-91	14,060	19,400	38%
I-5	SR-55 to SR-57	24,184	33,890	40%
SR-55	SR-22 to END	12,299	17,488	42%
SR-55	I-5 to SR-22	10,441	14,952	43%
I-405	SR-22 to I-605	27,022	38,744	43%
I-5	SR-133 to SR-55	19,633	29,760	52%
I-405	SR-133 to SR-55	10,469	16,021	53%
I-405	I-5 to SR-133	7,926	12,324	55%
I-405	SR-55 to SR-22	17,963	28,603	59%
I-5	I-405 to SR-133	16,120	26,635	65%
I-5	SR-73 to I-405	18,485	32,096	74%
SR-91	I-5 to SR-57	20,397	39,025	91%
SR-91	SR-57 to SR-241	18,613	36,060	94%
I-5	San Diego County Line to SR-73	15,947	34,549	117%

Source: SCAG 2007 Draft Air Quality Management Plan, Wilbur Smith Associates, 2006
Note: 1. Trucks include all Heavy-Duty Trucks (Light HDT, Medium HDT, and Heavy HDT).

The following can be summarized from the above table:

- I-5 from the San Diego County line to SR-73 shows an increase of 117 percent from approximately 16,000 in 2003 to 35,000 daily volumes by 2030.
- Truck volumes on SR-91 from I-5 to SR-57 and SR-57 to SR-241 increase to more than 90 percent by 2030.
- By 2030, the daily truck volumes on I-5 from SR-73 and I-405 show an increase of about 75 percent from 18,000 in 2003 to 32,000.
- Segments of I-405 from SR-133 to SR-55, I-5 to SR-133 and SR-55 – SR-22 show an increase of more than 50 percent by 2030.

Table 6 compares the truck volumes on the region's highway system projected for the Year 2030. The table below shows the potential differences in future forecast volumes due to changes in existing volumes (based on the difference between existing traffic count data and travel demand model forecasted base year traffic volumes). The description below shows the formula used to calculate the post-processed truck volumes:

- (Existing Volumes – SCAG Model 2003 Volumes) + SCAG Model 2030 Volumes = Post-Processed 2030 Volumes

Table 6
Forecast Truck Volumes on Region's Highway System

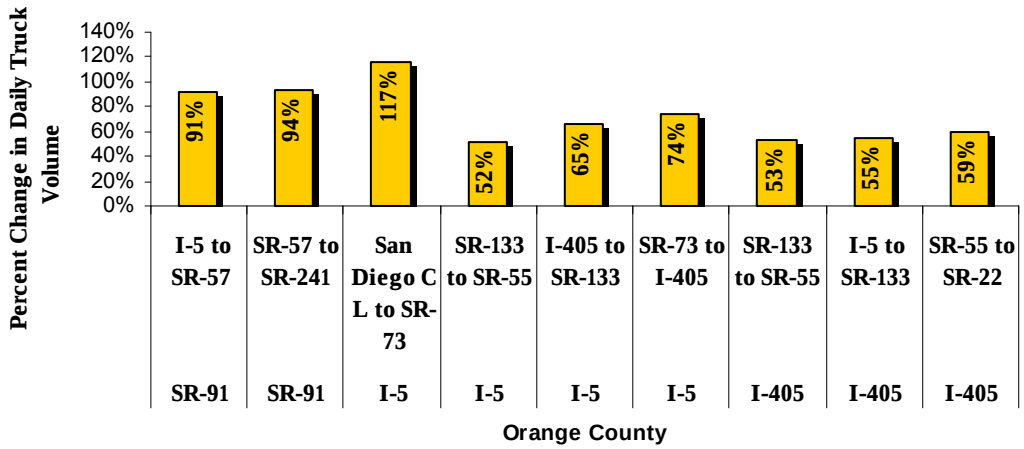
		SCAG Model 2030 Trucks[1]		Post-Processed Year 2030 Trucks	
Route	Segments	N/E	S/W	N/E	S/W
I-405	I-5 to SR-133	6,031	6,293	6,833	7,173
I-405	SR-133 to SR-55	8,112	7,909	9,695	9,487
I-405	SR-22 to I-605	21,716	17,029	11,852	9,456
I-5	SR-55 to SR-57	17,521	16,369	16,461	15,261
I-5	SR-133 to SR-55	16,375	13,385	17,669	14,474
I-5	I-405 to SR-133	15,214	11,420	14,543	10,863
I-5	SR-73 to I-405	17,914	14,183	13,097	10,000
SR-55	I-405 to I-5	7,367	6,492	8,950	7,975
SR-55	I-5 to SR-22	7,726	7,226	10,102	9,572
SR-55	SR-22 to END	9,162	8,326	10,649	9,703
SR-57	I-5 / SR-22 to SR-91	10,256	9,144	10,693	9,606
SR-57	SR-91 to SR-60	11,493	10,510	13,516	12,454
SR-91	I-5 to SR-57	17,162	21,863	13,767	18,468
SR-91	SR-57 to SR-241	16,481	19,578	13,761	16,777

Source: SCAG 2007 Draft Air Quality Management Plan, Wilbur Smith Associates, 2006
Note: 1. Trucks include all Heavy-Duty Trucks (Light HDT, Medium HDT, and Heavy HDT).

When compared to Table 5, the table above shows how the difference in existing counts versus model forecasted base year counts affects the Year 2030 forecasted volumes. Table 6 shows that the SCAG model carries lower truck volumes on SR-55, SR-57, and parts of I-405. This indicates that SCAG forecasts are based on lower truck volumes than actually exist when compared to existing data for the above freeway sections. Whereas, on certain freeway sections like parts of SR-91, I-5, and I-405, the SCAG model projects higher truck volumes when compared to the post-processed counts.

Figure 9 displays truck growth of more than 50 percent for freeway segments in Orange County between 2003 and 2030 based on the SCAG model.

Figure 9
Truck Growth 2003-2030



Source: SCAG 2007 Draft Air Quality Management Plan, Wilbur Smith Associates, 2006

The impact of increased truck traffic combined with similar growth rates in automotive traffic, will continue to stress Orange County's freeway system if additional capacity and operations improvements do not keep pace.

Orange County has an extensive list of highway improvement projects in the MCGMAP project list. There are more than 60 projects related to highways in the list, with an associated cost estimate of over $3.50 billion.

Warehousing and Other Local Truck Related Traffic

The County is the tenth largest industrial market in the country with an inventory of 271 million SF, compared to 379 million SF for the Inland Empire, which includes both Riverside and San Bernardino Counties.[6]

As a result of increasing land costs, industrial development has decreased over the past decade and has been displaced by new housing, as well as increasing amounts of research and development and technology space. This new "industrial" space includes more lab and office space and less assembly, manufacturing, and warehouse uses.

Following World War II, Orange County's industrial base began its growth along its northern boundary with Los Angeles County, and expanded south with the extension of I-5 and the overall expansion of the

[6] Source: The Grubb & Ellis Company market research report, Orange County 4Q 2007

freeway system. Large concentrations of industrial space displaced agricultural and dairy fields in Buena Park, Anaheim, Cypress, Fullerton, Brea, and La Habra. In the 1960's the Irvine Business Center spurred further industrial development around John Wayne Airport, creating a significant increase in new county businesses. The Irvine Spectrum, adjacent to the former El Toro Marine Base, contributed to significant growth in South Orange County beginning in the 1970's (initially with larger warehouse/distribution facilities and then transitioning to high-value added assembly and high technology space). Additional new development in South Orange County followed in Aliso Viejo, Santa Margarita, Foothill Ranch and southern portions of Tustin.

New industrial development is no longer concentrated in one geographical area, but is dispersed throughout the county. However, the amount of new construction is small compared to that of surrounding counties. Industrial construction in the fourth quarter 2007 for Orange County was only 704,000 SF compared to 23 million SF in the Inland Empire. Much of the new industrial space in Orange County, features higher office finishes with a smaller proportion of warehouse area. Buildings also tend to be smaller due to the high cost of land, which deters larger warehousing and distribution facilities.

The Orange County warehouse/distribution market comprises about 23 percent of the 271 million SF of county industrial space. At the end of the fourth quarter 2007, approximately 2.4 million SF, out of the total 62 million SF of warehouse/distribution space, 3.9 percent was vacant as shown in Table 7. Despite this low vacancy rate, the supply of this type of space is not expected to increase materially due to the high cost of land and the redevelopment of older industrial buildings for housing, office, retail centers, and business parks.

Table 7
Orange County Industrial Market – Fourth Quarter 2007

Property Type	Total SF	Vacant (SF/%)	Under Construction	Asking Rent ($/SF)
General Industrial	126,010,224	5,057,746	109,198	$0.83
Incubator Space	3,612,171	121,301	-	$0.91
R&D/Flex Space	79,796,408	3,261,902	158,660	$1.45
Warehouse/Dist.	61,990,321	2,427,355	436,017	$0.85
Total	271,409,214	10,888,305	703,875	

Source: The Grubb & Ellis Company market research report, Orange County 4Q 2007

NAFTA Truck Traffic

Trucking has been a contentious issue since the passage of the NAFTA agreement in 1994. Trucks carry over two-thirds of the trade between the U.S., Mexico, and Canada making it a dominant mode of freight transportation along the borders that service NAFTA trade. California is second only to Texas in truck based trade with Mexico, the value of which in 2004 was more than $3.6 billion, according to the U.S. Department of Transportation. I-5 is the main transportation corridor carrying about 80 percent of

California's imports from Mexico. Orange County is the second most congested county with most of the vehicle delays occurring on SR-91, I-405, and I-5. The movement of goods north-south on I-5 corridor passes through Orange County adding to the already existing traffic conditions. According to the 2003 Commercial/ Vehicle Board Crossing Survey from Caltrans District 11, an estimated 50,000 trucks have origins or destination (to/from) in Orange County. This estimate is based on roadside trucks surveys performed at border crossings. By 2017, the estimated number of trucks is expected to be 100,000 annually. The projected growth in freight traffic in addition to the auto traffic will likely continue to impact congestion along this key strategic corridor. In addition, trucks entering the U.S. from Mexico under NAFTA do not operate under the same stringent safety regulations as are required for U.S.-based trucking companies and operators. This raises potential safety concerns for other road users who have to share the same highways.

Corridor Convergence Issues

The corridor convergence issue relates to the inter-relationship between the various corridors that traverse the multi-county region. The impact of freight is multi-jurisdictional because goods move across jurisdictions utilizing various routes. Routing combinations can change based on a variety of performance measures used by drivers and traffic managers. Routing decisions can occur on a daily and long term basis, depending on the levels of sophistication of the various roadway users. Changing conditions on one route could increase or decrease traffic on another route. For Orange County, SR-91 comes into play as a part of the regional system. SR-91 is an alternative for local and regional truck traffic moving between major goods movement centers in and near the San Pedro Bay ports, the Inland Empire, and points east of California.

There is a significant interdependence among SR-91, I-710, I-605, I-10, and SR-60 truck corridors. First, SR-91 intersects with the I-110, I-710, and I-605 providing convenient means for truck and commuter traffic to switch between these major north-south corridors. Second, SR-91 follows an east-west pattern similar to the SR-60 and I-10 corridors, serving as a companion for east-west commercial and commuter traffic. However, according to the SCAG 2030 Draft Air Quality Management Plan (AQMP) Baseline Model, truck volumes on SR-91 between I-5 and I-15 escalate from 11,000 to more than 48,000 by 2030, an increase of 336 percent.

An issue at hand is the timing of improvements to this interconnected and interdependent network. Improvements to one corridor may shift the balance of traffic, causing a convergence of traffic toward the newly improved corridor. For example, if capacity improvements are made to SR-91 without similar improvements to the other aforementioned corridors, some portion of the existing and future truck traffic from the other corridors will likely converge onto SR-91. The same convergence effect will likely occur from any singular improvements made to the other corridors.

However, according to MCGMAP analysis of high priority freight corridors, the I-710, SR-60, and I-15 corridors were found to move efficiently in accommodating regional truck traffic to and from the international port of entry.

For the purposes of this project, the Modeling Working Group identified a set of projects and strategies for evaluation using the SCAG Regional Travel Demand Model. The initial objective was to perform a detailed evaluation of a set of projects and strategies that would have regional effects and could be compared across consistent criteria. Various east-west routes were evaluated as part of the process. Based on the earlier evaluation of system performance and land use (described in Tech Memo 6b), it was clear that a truck lane system that includes SR-60 as an east-west connection between I-710 and I-15, offers the best performance for a dedicated truck lane system accessing warehouse and distribution land uses.

When examining traffic volumes, proximity to schools, residential land uses, and connectivity to warehouse/distribution land uses, SR-60 as an east-west connection between I-710 and I-15:

1. Would carry the highest truck volumes.
2. Would carry very high vehicle volumes (compared to other options).
3. Would affect the least number of schools.
4. Would affect the least amount of residential land uses.
5. Would provide the most connectivity to warehouse/distribution land uses.
    a. As stated in Tech Memo 6b, all truck lane bundles show comparable reductions in hours of delay for trucks; therefore, changes to congested hours of delay for trucks is not referenced.

For the purposes of this project, different scenarios were considered for the evaluation of projects and strategies as described in Tech Memo 6b, therefore additional detailed analysis should be carried out before proceeding.

Air Quality

Negative impacts to air quality in Orange County are generated from emission sources not only internal to the county. Prevailing winds carry the airborne pollution into the county. A primary concern is the community's well-being and the environmental effects of poor air quality. Goods movement emissions are a significant source of pollution in the study area.

The goods movement industry is heavily dependent upon diesel fuel for mobility and operations. As discussed in Tech Memo 5b, diesel fuel results in the emissions of diesel particulate matter (DPM), which has been identified as a toxic air contaminant (TAC) by the state's Office of Environmental Health Hazard Assessment (OEHHA). Diesel fuel is also a significant contributor of nitrogen oxides (NOx), the primary pollutant for ozone formation. Both DPM and NOx are linked to various health issues for susceptible populations like the young and the elderly; as well as people with cancer and asthma, preterm births and low birth weight babies. Due to the current dependency the goods movement industry has on diesel fuel, this action plan focuses on emission reduction.

Diesel locomotive engines are the primary source of DPM emissions associated with rail, with rail support equipment and switchers also contributing to diesel PM. Rail emissions data within SCAQMD is presented in Table 8.

Table 8
Estimated 2005 Annual Average Rail Emissions in SCAB

	Pollutant (Tons per Day)				
	NOx	SOx	PM10	PM2.5	CO
Rail	31.79	3.33	1.05	0.97	6.55
TOTAL All Sources	975.3	58.48	291.95	112.49	4100.19
Rail % of Total	3.3%	5.7%	0.4%	0.9%	0.2%

Source: South Coast AQMD 2003 Air Quality Management Plan

Emissions caused by vehicle delays at rail crossings contribute further to air quality issues relating to goods movement rail activity. The Leachman study established year 2000 baseline emissions generated from delayed vehicles at grade crossings as follows: 9.65 tons of ROG; 100.46 tons of CO; 13.85 tons of NOx; 0.54 tons PM10; and 0.09 tons of SOx.[7]

The goods movement mobile sources targeted for emission reduction include Ocean Going Vessels (OGVs, or ships), On-Road Heavy-Duty Vehicles (HDVs, or trucks), Cargo Handling Equipment (CHE), Harbor Craft (HC), and Railroad Locomotives (RL).

Orange County's Goods Movement Plan

The county has made significant progress towards investing in goods movement related improvements. In fact, the issues outlined earlier have been central to the county's goods movement strategy to date, specifically on improving safety and reducing congestion at rail grade crossings along key freeway corridors, and enhancing freight and passenger rail capacity along key highway freight corridors.

[7] Inland Empire Railroad Mainline Study – Final Report. Leachman and Associates LLC for Southern California Association of Governments. June 30, 2006.

Overall Orange County Goods Movement Plan – Capital Projects and Funding Mechanism

Table 9 reflects the projects originally submitted by OCTA to the MCGMAP. Other projects, in Table 10, were identified by Caltrans District 12 and OCTA, and Figure 10 shows the projects mentioned.

Table 9
Grade Separation Projects

Orange County Railroad Grade Separation Projects	Estimated Project Costs[1]
Project Description	In $ Million
Placentia Avenue Undercrossing (Placentia & Fullerton)	$ 39.3 ACE
Kraemer Blvd. Undercrossing (Placentia)	$ 45.9 ACE
Orangethorpe Avenue Overcrossing (Placentia & Anaheim)	$ 83.9 ACE
Tustin Avenue/Rose Drive Overcrossing (Placentia & Anaheim)	$ 63.4 ACE
Jefferson Street Overcrossing (Placentia & Anaheim)	$ 44.0 ACE
Van Buren Avenue Overcrossing (Placentia)	$ 35.5 ACE
Richfield Road Crossing (Placentia)	$ 69.8 ACE
Lakeview Avenue Overcrossing (Placentia & Anaheim)	$ 58.5 ACE
Kellogg Drive Undercrossing (Anaheim)	$ 53.3 ACE
State College Blvd (Fullerton)	$ 62.1 ACE
Raymond Avenue (Fullerton)	$ 63.7 ACE
Acacia (Fullerton)	$ 35.0 ACE
Sub Total	$ 645. 0
Sand Canyon Ave (Irvine)	$ 27.60 LOSSAN
Red Hill Avenue (Tustin)	$ 88.90 LOSSAN
State College Blvd (Anaheim)	$ 72.01 LOSSAN
17th Street (Santa Ana)	$ 65.52 LOSSAN
Grand Avenue (Santa Ana)	$ 46.01 LOSSAN
Santa Ana Blvd (Santa Ana)	$ 58.93 LOSSAN
Ball Rd. (Anaheim)	$ 65.0 LOSSAN
La Palma (Anaheim)	$ 65.0 LOSSAN
Lincoln (Orange)	$ 65.0 OLIVE
Katella (Orange)	$ 65.0 OLIVE
Sub Total	$ 618.97
Total	$ 1,263.97

Source: OCTA, 2006

Orange County Railroad Grade Separation Projects

April 14, 2008

Figure 10

The above table represents grade separation projects in the County that are critical to the movement of freight and people within the county.

The following table is the list of projects compiled as part of the MCGMAP (Table 10).

Table 10
MCGMAP Projects in Orange County

Category	County	Description	Cost ($Mill's)
Modification of Delivery Hours	All	Extend Delivery Hours to 24 hours	TBD
Use of LCVs on Dedicated Facilities	All	Evaluate Use of LCVs on Dedicated Facilities	TBD
Data and Analytical Methods	All	Improve demand forecasts for labor and equipment across all modes/ Employ better trade and transportation forecasting	TBD
Institutional Changes to Improve Feasibility of Large Scale/Mega Projects	All	Enact expanded public-private partnership legislation/ design-build and design sequencing legislation	TBD
Mainline Rail Capacity Enhancement	LA/SBD/RIV/OR	Triple track BNSF Transcon; double track two UPRR corridors: LA to San Bernardino	$2,300.0
Rail Grade Separations and Grade Crossing Safety Upgrades	LA/SBD/RIV/OR	Alameda Corridor-East Trade Corridor Grade Separations	$3,456.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91 - Eastbound Lane Addition from SR-241 to SR-71	$100
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91 WB at Tustin Avenue provide one additional general purpose lane between SR-55 and SR-57	$62
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91 - New Interchange at Fairmont Boulevard	$101
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-57 - Northbound lane from Katella Av. to Lincoln Av.	$60
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-57 - Northbound lane from Orangethorpe Av. to Lambert Rd.	$150
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91 - Add fourth westbound lane between SR-57 and I-5	$175

Table 10
MCGMAP Projects in Orange County

Category	County	Description	Cost ($Mill's)
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-57 Northbound from Lambert Road to the SR-60 IC add truck climbing lane	$158.0
Truck Lanes/Facilities	OR	SR-91 - Add 5th GP lane in each direction between SR-55 and SR-241	$135.0
Application of ITS Technology for Vehicle Management and Routing	OR	SR-91 EB/WB from Truck scales - Add storage lane at truck weigh in motion station between Weir Canyon and Imperial Hwy. Includes ITS components.	$11.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, IC/Ramp modifications (acceleration lanes) at various locations on all routes to accommodate trucks. Include ITS components.	$130.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, At Crown Valley Parkway Ramp Improvements for SB Off-Ramp. Include ITS components.	$10.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Re-construct southbound on-ramp and off-ramp at Alton Pkwy. Include ITS components.	$2.7
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Add aux lane from Oso to Crown Valley and widen off-ramp. Include ITS components.	$9.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Reconstruct northbound on-ramps, construct SB auxiliary lanes and widen arterial at Oso Parkway. Include ITS components.	$22.4
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 From Alicia Parkway through El Toro Road extend auxiliary lane through interchange. Include ITS components.	$9.1
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Construct auxiliary lane from the Collector Distributor Rd to Bake Pkwy off-ramp to provide two lane off-ramps. Include ITS components.	$5.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Construct auxiliary lane between the Collector Distributor Rd and Alton Pkwy off-ramp. Include ITS components.	$5.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Construct auxiliary lane and add 2nd off-ramp lane from SB I-5/133 Branch Connector to Barranca Pkwy. Include ITS components.	$10.5

Table 10
MCGMAP Projects in Orange County

Category	County	Description	Cost ($Mill's)
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Construct 2nd auxiliary lane and widen off-ramp at Jamboree Road. Include ITS components.	$7.4
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Widen arterial eastbound and northbound loop-on-ramp at Jamboree Road. Include ITS components.	$3.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Reconstruct Avenida Pico Interchange and widen arterial. Include ITS components.	$53.3
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Mainline curve correction between Stonehill and SR-1. Include ITS components.	$57.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, New SB off-ramp at Stonehill. Include ITS components.	$43.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Reconstruct the interchange at Ortega Hwy (SR-74). Include ITS components.	$73.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 construct new interchange at Crown Valley (Saddleback) and reconstruct interchange at Avery Parkway with collector distributor road between Crown Valley and Avery	$260.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Reconstruct the interchange at Avery Pkwy and widen arterial. Include ITS components.	$39.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Reconstruct the Interchange at La Paz Road and widen arterial. Include ITS components.	$30.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Jeffrey Road and Walnut Avenue I-5 SB ramps Add eastbound shared second through lane/second right turn lane. Include ITS components.	$1.3
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5, Interchange improvement between 4th street off-ramp to north and Newport Avenue to south on the I-5, and 4th Street to the north and Edinger Avenue to the south on the SR-55. Include ITS components.	$176.0

Table 10
MCGMAP Projects in Orange County

Category	County	Description	Cost ($Mill's)
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 From the SR-57/SR-22 Interchange to SR-91 add a general purpose lane in each direction	$20.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 Reconstruct El Toro Road Interchange	$120.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 between SR-55 and the SR-133 (near El Toro "Y") add one general purpose lane in each direction and improve interchange in the vicinity	$319.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-5 between the vicinity of El Toro 'Y' to near SR-73 add new lanes in each direction	$315.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-39, Widen highway under freeway from three to four lanes SR-39 / I-405 Interchange. Include ITS components.	$17.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-55 19th Street to SR73 add auxiliary lanes. Include ITS components.	$10.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-55 Construct Aux Lane SB from Dyer to Edinger in the city of Santa Ana. Include ITS components.	$26.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-55 Construct Aux Lane NB from Dyer to Edinger in the city of Santa Ana. Include ITS components.	$44.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-55, I-5 to SR22 add aux lanes. Include ITS components.	$17.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-57, At SR-91 add 4th general purpose lane. Include ITS components.	$2.6
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91, Lakeview interchange construct barrier-separated onramp (2 lanes) from SB Lakeview to WB SR-91. Include ITS components.	$6.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91, Relocation of Weigh Stations in both directions. Include ITS components.	$26.0

Table 10
MCGMAP Projects in Orange County

Category	County	Description	Cost ($Mill's)
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91. SR-241 to SR-71 add EB auxiliary lanes. Include ITS components.	$195.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-91 Eastbound add a lane between SR-55 (Lakeview and SR-241 and Westbound from SR-241 to Imperial Highway)	$96.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	SR-133: I-405 to I-5 add 1 general purpose lane in each direction and aux lanes. Include ITS components.	$83.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Sand Canyon Ave SB off-ramp add second drop lane from I-405 to the off-ramp. Include ITS components.	$3.0
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Widen on-ramp from 2-lane to 3-lane at WB Culver Dr. Include ITS components.	$2.7
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Modify ramp and add 2nd NB off ramp at Talbert interchange in Fountain Valley. Include ITS components.	$3.1
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405: Add SB auxiliary lane from SR-133 to Irvine Center Drive. Include ITS components.	$7.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405: Construct Sand Cyn SB on-ramp with an auxiliary lane to the SR-133 Collector Distributor Road. Include ITS components.	$5.6
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Construct SB auxiliary lane in between Jeffrey Road On-Ramp & Sand Canyon. Include ITS components.	$7.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Add NB Aux lane from Jeffery on-ramp to Culver Dr. off-ramp. Include ITS components.	$5.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Construct aux lane from Talbert to Ellis/Euclid in the City of Fountain Valley. Include ITS components.	$18.2
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Construct aux lane from Euclid to Brookhurst in the City of Fountain Valley. Include ITS components.	$23.8
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Construct NB auxiliary lanes from Brookhurst to Beach in the City of Fountain Valley. Include ITS components.	$26.3

Table 10
MCGMAP Projects in Orange County

Category	County	Description	Cost ($Mill's)
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405, Construct SB Auxiliary lanes from Magnolia to Brookhurst in the City of Fountain Valley. Include ITS components.	$24.5
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405: Widen and extend collector distributor road southerly to serve both SR-133 and Irvine Center Drive. Include ITS components.	$16.6
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405: SR-133 to SR-55, add 1 general purpose lane in each direction and auxiliary lanes. Include ITS components.	$26.3
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405: Reconstruct SB 405 connector to SR-133, braid with NB off-ramp from SR-133 to Barranca Parkway. Include ITS components.	$102.7
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-405: South Bristol Braid delete left turn access from NB Bristol to SB I-405. Provide right turn on-ramp from NB Bristol to SB I-405 via a new braid that provides direct access to NB SR-55. Include ITS components.	$69.0
Freight Corridor Capacity Enhancement and Operational Improvement	OR	I-405: Add a general purpose lane and auxiliary lane in each direction between SR-73 and I-605. Include ITS components	$1.3
Freight Corridor Capacity Enhancement and Operational Improvements	OR	I-605, Intersection Modification & ramp entrance Katella Ave on ramp to NB I-605. Include ITS components.	$2.0
Grand total		(highways only)	$3,533.3 billion

Source: Wilbur Smith Associates, 2007

The projects in Orange County are dominated by highways due to its importance as a linkage in the regional highway and rail systems. As discussed above, the MCGMAP list includes rail and grade crossing improvements.

The challenge ahead is funding. While the list of projects is likely to yield great benefits, it is no where near fully funded. In the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the Alameda Corridor East asked for $900 million but received funding for four projects totaling $167 million. Orange County received $31 million of that funding. Orange County also received $12.8 million for a grade separation on the BNSF Transcon at State College Boulevard in Fullerton. While some level of the requested federal funding was secured as part of SAFETEA-LU, the federal share fell far

short of the needed funding levels, increasing the burden for funding from other sources. With the passage of Proposition 1B in November 2006, $2 billion was made available state wide to fund goods movement – related projects. As part of partnership of regional transportation agencies, OCTA is positioned to receive as much as $217 million for goods movement projects.

In November 1990, Orange County voters approved Measure M, a half-cent local transportation sales tax for twenty years. All of the major projects promised to and approved by the voters are underway or complete. Funds that go to cities and the County of Orange to maintain and improve local streets and roads, along with transit fares reductions for senior and persons with disabilities will continue under Measure M until it ends in 2011.

However, in November 2006, the voters of Orange County approved the Renewed Measure M Investment Plan. The plan is a 30 year $11.8 billion program designed to reduce traffic congestion, upgrade key freeways (such as SR-91), fix major freeway interchanges, construct and maintain streets and roads, synchronize traffic signals countywide, and build a high capacity transit system. With the passage of Renewed Measure M, an estimate $4.87 billion, over a thirty year period will be invested in new freeway construction.

Next steps

The county's Goods Movement Action Plan moving forward should continue its focus on the larger challenges that lay ahead, particularly the institutional and funding challenges. In order to implement the goods movement projects that so far have made the list, the county will have to reach beyond the conventional approaches of securing funding.

1. Build on Public-Private Funding Arrangements – There are limitations to the amount of federal and state funding, so it is important to increase funding from public-private sectors. Implementing the mainline rail capacity enhancements together with the grade separations of railroad crossings, provides an opportunity for maximizing federal, state, and private sector involvement. Increasing mainline rail capacity could reduce truck trips, congestion and emissions related to over half of the international container market. The Alameda Corridor-East Trade Corridor includes over $4 billion in needed grade separations and crossing safety improvements.

2. Continue with Multi-Jurisdictional Efforts - The County should make every effort in continuing to participate in larger multi-jurisdictional efforts such as the MCGMAP and the Southern California Trade Corridors Improvement Fund Consensus Working Group. While multi-jurisdictional efforts are typically a longer term approach, the end result is likely to improve the county's chances of participating in the fruits of the effort, be they funding, operational, technological or policy based. The MCGMAP effort has greater weight than any single county effort. For example, the issue of corridor convergence identified earlier in this report can best be addressed by participating in the MCGMAP, making every effort to ensure that the improvements (or the lack thereof) to facilities in neighboring counties do not have a negative impact on the viability of Orange County facilities.

In addition to participating in external efforts, Orange County should continue to build on efforts to encourage coordinated, efficient, sustainable goods movement among jurisdictions within the county. This includes improving understanding of the policies and legislation related to urban goods movement, removing barriers to coordination, providing incentives towards coordination (including the relationship with commuter travel), communicating the role of goods movement, and illuminating areas for public/private investment in goods movement. This is reflected in OCTA's goods movement policy.

3. Develop Non-Capital Based Approaches to Enhancing Service - Orange County should focus on developing a non-capital based systems approach to managing goods movement demand throughout the county. The basis for this approach is brought out clearly when analyzing truck volumes throughout the county's system of freeways. I-5, SR-91, SR-55, SR-57, and SR-22 function as a system of freeways that serve goods movement. On any given day, a truck has the option of choosing a variety of route combinations going either east-west or north-south throughout the system. Nowhere are the system interactions more apparent than in the upper northwest part of the county, where the system of freeways is a candidate for managing goods movement demand across the entire sub-system. By applying demand management techniques (time-of-day policies particularly where I-5 intersects with the other aforementioned goods routes to the northwest of Orange County), the routing and demand for trucking can be better balanced to meet the supply of capacity.

4. Pursue a Region-wide Public-Private Funding Approach - A regional public-private funding approach is likely to make the most significant contribution to goods movement funding over the coming decades. As it stands, relying on federal and state funding is not enough. For example, the Alameda Corridor-East Trade Plan to fund much needed grade-separation projects, which will reduce congestion and emissions throughout the region, has an 86 percent funding gap totaling over $3.8 billion, and this is despite receiving state and federal funding. Moreover, the state's recently passed Proposition 1B provides an additional $19.925 billion in general obligation bonds funds. Even with these resources, there will not be enough funding to pay for all necessary infrastructure and mitigation projects. Given the limitations of federal and state funds, it must be recognized that self-help public-private funding arrangements will be the best way to complete the financing for critical projects. Again, although the benefits of regional efforts may be longer term, there are several on going efforts by the ports and SCAG that suggests a regional approach to public-private partnerships would be worthwhile. Based on SCAG's elasticity study, it is believed that several billion dollars could be raised through the implementation of container fees without impacting the competitiveness of the region, as long as the resources are used to improve goods movement capacity.

5. Land Use Based Approaches – The issue of local funding to mitigate the impact of goods movement on local communities is often overlooked. Orange County is experiencing conflicts between commercial and non-commercial land uses while nearing maximum build-out. There is a notable clustering pattern of land uses that generate freight traffic, particularly warehouse and industrial land uses. This clustering provides a basis for urban planners to develop land use

approaches towards managing the flow of goods at the local level. Land use based policies are an important part of concentrating goods movement demand onto those parts of the system designed to accommodate goods movement. Efforts should be made to develop a better understanding of the relationship between land use and urban goods movement, and to promote the development of land use policies that support coordinated urban goods movement. Specific land use aspects of goods movement that should be further explored are the effects of transportation on decisions to locate establishments, implications related to big box retail, preferential zoning to direct goods movement clustering, avoiding residential development next to railroad tracks, and proximity guidelines to reduce encroachment on logistics centers.

6. State and Federal Profile – The Orange County delegations should continue their efforts at garnering support for goods movement funding at the state and federal level.

Conclusion

The purpose of this section is to show a relationship between county projects and the recommended primary actions of the MCGMAP. The four action sets in the MCGMAP are:

- Action Set 1: Accelerate Regional Environmental Mitigation
- Action Set 2: Relieve Congestion and Increase Mobility
- Action Set 3: Improve Operational Efficiency
- Action Set 4: Develop Equitable Public/ Private Funding Strategy

A brief description of each action set and how it relates to county activities and projects is provided below.

Action Set 1: Accelerate Regional Environmental Mitigation seeks to mitigate environmental impacts at three levels. The levels are a broad regional approach, regional conformity, and project specific mitigation. The regional approach is for broad strategic policies/efforts focusing on further reducing region-wide impacts. Regional conformity holds emissions to caps set in various plans through aggressive actions, implementing known technologies, and best practices. The project specific mitigation requires project sponsors to consider and disclose environmental impacts when planning projects and to address how potential impacts will be resolved. This part of the project development process is specified in the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA).

The freeway lane, rail grade separations and operational/safety improvements in the Orange County project list can improve system wide mobility and therefore reduce mobile source emissions. It should be noted that the projects may have local impacts that are not addressed within this regional goods movement framework except to the extent that they will need to meet CEQA/NEPA requirements.

Action Set 2: Relieve Congestion and Increase Mobility focuses on improving all aspects of the transportation system to improve region-wide mobility and safety. Specifically the action set seeks to:

- Increase intermodal lift capacity. Intermodal lift is defined as the transportation of freight by using two or more modes of transportation; for example, shipment of containers by rail to ship to truck.
- Increase mainline rail capacity
- Mitigate increase mainline rail capacity with the implementation of grade separate railroad crossings projects
- Improve highways through comprehensive innovative approaches
- Continue with general purpose highway improvements/safety and operational improvements

The freeway projects will provide market-segmented relief and increased mobility for freight moved by truck. Market-segment approach in this context refers to the location and or method of delivery of goods serving the market. The grade separations will reduce delays at grade crossings. Rail capacity will increase with the triple tracking of the BNSF lines through the county.

There is a long way to go to address all the issues associated with goods movement. Funding for most of these projects has yet to be obtained; however, the projects listed are moving Orange County in the right direction. The county is contributing to solving regional goods movement issues with these projects.

Action Set 3: Improve Operational Efficiency addresses two categories of actions. These are:

- Improve marine terminal productivity, truck turn times, and intermodal operations
- Improve highway operations through new technologies

These improvements would make the most of existing infrastructure by making the utilization more efficient.

Most of the projects in the Orange County portion of the MCGMAP project list that deal with highways specifically call for Intelligent Transportation Systems (ITS) components. These components will make the improvements work that much more efficiently. By including the ITS component not only are the efforts providing increased mobility but also they are improving operational efficiency. Improving highway operations through new technologies includes various applications. ITS integrate application of advanced technologies that utilize advanced computers, sensors, electronics, communications, and other technologies to improve the safety and efficiency of all modes of surface transportation for people, goods, information, and services including inter-modal transfers.

Strategies that could be employed on the transportation system include i.e. one-stop state, interstate and federal credentialing for all commercial vehicles traveling in California, integrated public agency goods and carrier data collection/tracking software for real-time data exchange and coordination of agency efforts, collision avoidance at highway-rail grade crossings, electronic bridge clearance system, commercial/vehicle locator system and supply change management utilizing technology based process monitoring.

Action Set 4: Develop Equitable Public/ Private Funding Strategy recognizes that implementation of the actions, projects, and programs with the associated mitigations will require a coordinated effort by the private and public sectors. The action set seeks to:

These improvements would make the most of existing infrastructure by making the utilization more efficient.

Most of the projects in the Orange County portion of the MCGMAP project list that deal with highways specifically call for ITS components. These components will make the improvements work that much more efficiently. By including the ITS component not only are the efforts providing increased mobility but also they are improving operational efficiency.

Improving highway operations through new technologies includes various applications. Intelligent transportation systems (ITS) integrate application of advanced technologies that utilize advanced computers, sensors, electronics, communications, and other technologies to improve the safety and efficiency of all modes of surface transportation for people, goods, information, and services including inter-modal transfers.

Action Set 4: Develop Equitable Public/ Private Funding Strategy recognizes that implementation of the actions, projects, and programs with the associated mitigations will require a coordinated effort by the private and public sectors. The action set seeks to:

- Maximize the study area's fair share of state and federal funds
- Identify opportunities for project-specific user needs
- Establish institutional structure for managing user fees and revenues
- Initiate supportive legislation

Statistics, congestion, and the county's role as a bridge shows that goods movement is an important transportation issue in Orange County. The role of goods movement within Orange County and its surrounding counties is clear. However, given the recent experience surrounding the possible shortfall in expected federal resources for goods movement, and the allocation of these resources throughout the region, a serious effort must be made toward increased funding from non traditional sources. This may include tapping into the productivity gains and cost savings that go to the business and industrial sectors which use the county's transportation systems and services. Moreover, working in cooperation with neighboring counties is critical to increasing the realm of possible solutions. This effort has begun to bear result in the form of a regional effort to secure a fair share of Proposition 1B Trade Corridor's Improvement Funds (TCIF). As mentioned before, Orange County is positioned to receive an estimated $217 million in TCIF funds.

To maintain economic vitality, the region needs to provide a competitive advantage in terms of the speed and reliability of moving goods to U.S. markets while mitigating environmental impacts to the region. All the projects in the county ultimately are designed to insure that Southern California maintains if not enhances its economic position. Maintenance of the regions' economic vitality will be enhanced by the actions being done in Orange County. The economic vitality of the region will benefit from the actions underway and planned by Orange County.

Ongoing Collaboration

This county action plan is part of the comprehensive MCGMAP. The MCGMAP is the beginning of a more comprehensive regional approach to keep freight moving within and through the region and to reduce the environmental and community impacts caused by the movement of that freight. Going forward, stakeholders will play an integral role in the next steps in the areas of partnership and advocacy, environmental and community impacts, mobility and funding. Based on feedback from stakeholders and Action Plan recommendations, the MCGMAP project partners are committed to work towards:

- Greater Partnership and Advocacy
- Reduce Environmental and Community Impacts
- Increase Mobility
- Improve/Increase Funding